



CODEN [USA]: IAJPBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF  
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.1258058>Available online at: <http://www.iajps.com>

Research Article

**KAP OF FOOD HYGIENE AMONGST PROFESSIONAL COOKS  
IN RAWALPINDI/ISLAMABAD**<sup>1</sup>Dr. Nazia Ali, <sup>2</sup>Dr. Aniqah Sahi, <sup>3</sup>Dr. Sheher Bano<sup>1</sup>Yusra Medical and Dental College, Islamabad<sup>2</sup>WMO, BHU Burala<sup>3</sup>Sahiwal Medical College Sahiwal**Abstract:**

**Introduction:** Improper practices and lack of knowledge amongst food handlers and professional cooks are major contributing factors for the spread of food borne outbreaks. Apart from being a major strain on the economy, they cause a vicious cycle of disease and malnutrition, in turn affecting the entire countries health status as a whole.

**Objective and Methodology:** The main objective of this study was to determine the Knowledge, Attitude and Practices (KAP) about hygiene/hygienic practices amongst the professional cooks employed in the cities of Islamabad and Rawalpindi. Across sectional study was conducted amongst 280 professional cooks. A structured closed questionnaire based upon the WHO handbook of safe food, was completed and entered into SPSS version 22 for analysis. The cooks were selected through convenience sampling Technique, from a range of different types of restaurants, ranging from five star hotels, to small restaurants to roadside "dhabas". The majority of the respondents were males with a minimum secondary level of education.

**Method:** Study design: Cross sectional study. Sample size: Professional cooks were selected from different restaurants of RWP/Isb. Sampling technique: The respondents were selected through convince sampling technique. Data collection tool: A structured closed ended was administered

**Result:** Only 17.9% cooks had professional education & 31.8% had basic education till matriculation. Level of knowledge was more in educated respondents and practicing more while on other hand 82.1% cooks were not professionally trained have no formal education, were not practicing and have less knowledge about food hygiene.

**Conclusion:** Majority of the respondents were aware of basic knowledge pertaining to food hygiene however; those only those who had taken professional training were practicing proper food hygiene. Knowledge of food borne diseases and outbreaks was also very poor in uneducated respondents. Attitude of those who had some level of education was significantly better than those who had no education at all.

**Keywords:** KAP, food hygiene, professional cooks, Rawalpindi and Islamabad.

**Corresponding author:****Dr. Nazia Ali,**

Yusra Medical and Dental College,

Islamabad

QR code



Please cite this article in press Nazia Ali et al., *KAP of Food Hygiene Amongst Professional Cooks In Rawalpindi/Islamabad*, Indo Am. J. P. Sci, 2018; 05(05).

**INTRODUCTION:**

According to WHO food borne illnesses are major problems in the both the developing and the underdeveloped world. A recent study conducted states that Food safety is a vital issue both in developed and developing countries; given that food borne illnesses contribute to millions of illnesses and thousands of deaths annually. Apart from being a major strain on the economy, they cause a vicious cycle of disease and malnutrition, in turn hurting the entire countries health status as a whole. Diarrheal diseases, mostly caused by these food borne microbial pathogens, are the leading causes of illness and deaths in the developing countries, killing an estimated 1.9 million persons annually at the global level. In addition WHO also reports that 18% of children aged below 5 years old in developing countries die due to diarrhea globally. In one study food handlers (professional cooks included) were identified as the main cause of food contamination thus; safer food handling methods are the key to reducing the prevalence of food borne diseases. In the light of this, the WHO published the Five Keys To Safer Food manual. The core messages of the Five Keys to Safer Food include (1) keep clean; (2) separate raw and cooked; (3) cook thoroughly; (4) keep food at safe temperatures; and (5) use safe water and raw materials. These five keys to safer food are of immense importance in developing countries, and equipping professional cooks in countries with such information could impact significantly on food safety. However, very little is known about how these cooks themselves perceive and priorities food safety knowledge and practice.

The studies conducted globally all show the need for improved understanding of the factors that influence the knowledge attitude and practices individually, even though they have shown a significant correlation with one another. This understanding is important in order to provide proper training where required and to regulate safer food hygiene globally to minimize the risk of diseases.

**MATERIAL AND METHOD:**

Previous studies have assessed the important of knowledge, attitude and practices among food handlers. This shows that the assessment is very crucial to provide sufficient data for further action.

A study conducted on the knowledge attitude and practices of street food vendors states that these professional cooks are an integral part of urban life. In many cities worldwide, street vendors are a particularly important source of convenient, affordable food for the urban poor and working classes in both developed and developing

countries. Analysis revealed that all the respondents had consistently poor knowledge (20.5%), attitude (17.2%) and practice (16.9%). However, average attitude (62.9%) and food safety practice (71.5%) was high compared to knowledge (41.6%), but the good attitude (19.1%) and practice (10.8%) were low compared to knowledge (36.8%). It further states that This might be because training helps to improve overall food vendors practice of food safety. analysis revealed that it was 4.039 times higher with good practice and 2.834 times higher with average practice of food safety among respondents with history of food safety training. Similar findings were reported in previous studies (Costello et al. 1997; Finch & Daniel, 2005; Roberts et al., 2008). But Luby et al., (1993) reported that training is not consistently associated with knowledge. The present study did not find any significant association between knowledge and food safety training ( $p > 0.05$ ). But training itself increased the food safety attitude and practice ( $p < 0.05$ ).

It concludes that It might be their desire for procedural knowledge that enhances behavioural practice. Training is critical to any system of food hygiene. Training, instruction and proper supervision increase the potential of the food vendors. On the other hand, inadequate hygiene of any person involved in food-related operations represents a potential threat to the safety of food and its suitability for consumption.

however; food safety practices are somewhat more difficult to evaluate because of self-reported bias. Further exploration is needed on food safety practices and cognition among the street food vendors. For example, the food vendors had sufficient "good knowledge" but their attitude and practice was not up to the level. Food safety training appeared to be a strong predictor for attitude and food hygiene practices. Continuous monitoring and periodic training incorporating basic principles of food safety and microbial surveillance of foods is essential to optimising food hygiene in the food vending business.

Another study was conducted among 64 cooks from various food premises in Kuala Pilah, Malaysia. The study concluded that the knowledge and attitude showed significant relationship with practice level. Logistic regression predicts that the odds of getting poor practice level are 15.4 times higher for respondents with acceptable knowledge level than they are for respondents with excellent knowledge level ( $p = 0.034$ ). These findings support the evidence of having good knowledge and attitude will lead to

good practice measures. This study suggests that even though the KAP level of the food handlers was satisfactory, some of the hygiene aspects need to be emphasized. Continuous education and training should strengthen food handlers knowledge in area which seems to be lacking. In addition, education and food safety training should be provided frequently to the food service staff in order to minimize food borne hazards.

From the analysis of relationships between knowledge, attitude, and behavior were extrapolated and found that they shared positive relationships with one another. The results also indicated attitude was the mediating variable for knowledge on behavior. Griffith and Clayton reported that improved knowledge will lead to behavioral changes involving improved practices, and also suggested that other factors, including staff attitudes, can limit or prevent improvements in staff practices. Training for employees has been shown to improve food safety knowledge and hygienic awareness and may result in improved food safety practices. however, there is considerable evidence that improved knowledge does not always translate into improved food handling behaviors.

Thus, there would appear to be a clear linkage between effective formal training, improved catering practices, and prevention or significant reduction of food borne outbreaks in the foodservice industry. Attitudes, an important factor besides knowledge and enforcement, ensure a downward trend of food borne illnesses. The necessary link of positive behavior, attitudes, and continued education of food handlers towards the sustainability of safe food handling practices has been highlighted.

The studies have demonstrated that although training may increase food safety knowledge, a positive change does not always subsequently occur in terms of food handling behavior.

Another cross sectional study was performed for the period of six months from June to November 2013. The study subjects were included all 60 food handlers working in girls hostel, boys hostel and hospital kitchen. The present study showed that food handlers had poor knowledge of food borne diseases in terms of etiology (46.67%), mode of transmission (33.33%) and mode of prevention (36.67%). Poor attitude was observed in pre evaluation before employment (56.67%). it reported that poor knowledge was in etiology (58.8%), symptoms (59.3%) and treatment (52.6%); poor attitude in terms of awareness of personal hygiene (55.8%) and practice towards food-

borne disease and food safety was poor in view of hand washing (50.9%), personal hygiene (63.7%), treatment (50.2%) and safety food handling (54.7%). In the present study, socio-demographic variables such as low educational level influences the knowledge of food borne diseases, and attitude was determined by age below 45 years and male food handlers. These findings agrees with Green *et al.*, 2007 that a chain of personal, social and workplace factors influences the practices of the professional cooks, and these factors need to be investigated in order for a change in behavior to take place.

Another study conducted upon the factors influencing food hygiene practices of employees took 406 food handlers working in food and drink establishments 213, (52.5%) had good food handling practices. This finding was consistent with studies in Malaysia and Nigeria, which had safety food handling practices of 54.7% and 54.7% [1,11] respectively. It was greater than findings in Turkey which had prevalence of 48.4%. But this finding is lower than the finding in Mekelle town, Ethiopia, in which a practices of food handlers on food hygiene was found to be 63.9%.

The probable reasons for the differences might be due to difference in socio demographic and environmental factors difference in the two study groups. Food handlers whose monthly income < 379.00 ETB were 60.5% less likely to have good food handling practices compared to those whose monthly income  $\geq$  379.00 ETB (AOR = 0.395, 95% CI, 0.25-0.62). The possible reason for this might be those who had monthly income  $\geq$  379.00 ETB might have good educational status, experience and knowledge towards food handling practices. Food handlers who had good knowledge were 1.69 times more likely to have good food handling practices compared to those who had poor knowledge (AOR = 1.69, 95% CI, 1.05-2.73). This finding is in line with the findings in Mekelle with [AOR: 3.61, 95% CI: (1.51-8.65)].

This study Concludes Above half of food handlers had good food handling practices. The predominant factors associated with good food handling practices were marital status, monthly income, knowledge status, existence off shower facility, existence of separate dressing room and presence of insects and rodents.

Yet another Study reports that Generally knowledge of food safety was good with the mean score  $90.3 \pm 7.787$ . However, respondents lacked knowledge about the hazards of reheating cooked food ( $75.1 \pm$

25.662) and the safe temperature of cooked food ( $71.9 \pm 33.548$ ). Knowledge differed significantly by age groups ( $F=2.530$ ;  $p=0.044$ ). Respondents had positive attitudes about food safety, with a mean score of  $93.9 \pm 6.813$ , although there were significant differences between trained and untrained workers ( $t=2.406$ ;  $p=0.018$ ); The mean score for practice was  $92.9 \pm 7.647$  and again there were significant differences related to education levels ( $F=1.345$ ;  $p=0.003$ ), gender ( $t=-2.120$ ;  $p=0.036$ ) and ethnicity of Malaysian workers ( $F=2.502$ ;  $p=0.034$ ). A strong relationship was found between knowledge and attitudes about food safety ( $r=0.266$ ;  $p=0.002$ ) and between knowledge and practice ( $r=0.203$ ;  $p=0.022$ ). In conclusion, this study suggests that professional cooks in restaurants displayed good knowledge, a positive attitude and an excellent practices regarding food safety.

Yet; results showed the food workers still lack basic knowledge of food safety, particularly related to reheated food and safe temperatures for cooked food.

In conclusion; the studies conducted earlier all show the need for improved understanding of the factors that influence the knowledge attitude and practices individually, even though they have shown a significant correlation with one another. This understanding is important in order to provide proper training where required and to regulate safer food hygiene globally to minimize the risk of diseases.

#### Method

Study design: Cross sectional study

Sample size: Professional cooks were selected from different restaurants of RWP/Isb.

Sampling technique: The respondents were selected through convince sampling technique.

Data collection tool: A structured closed ended was administered

Data analysis: Data was analyzed through SPSS version 22. descriptive & analytical techniques were applied.

#### RESULTS:



fig.1.1:- Bar chart shows that majority of respondents were not professionally trained.

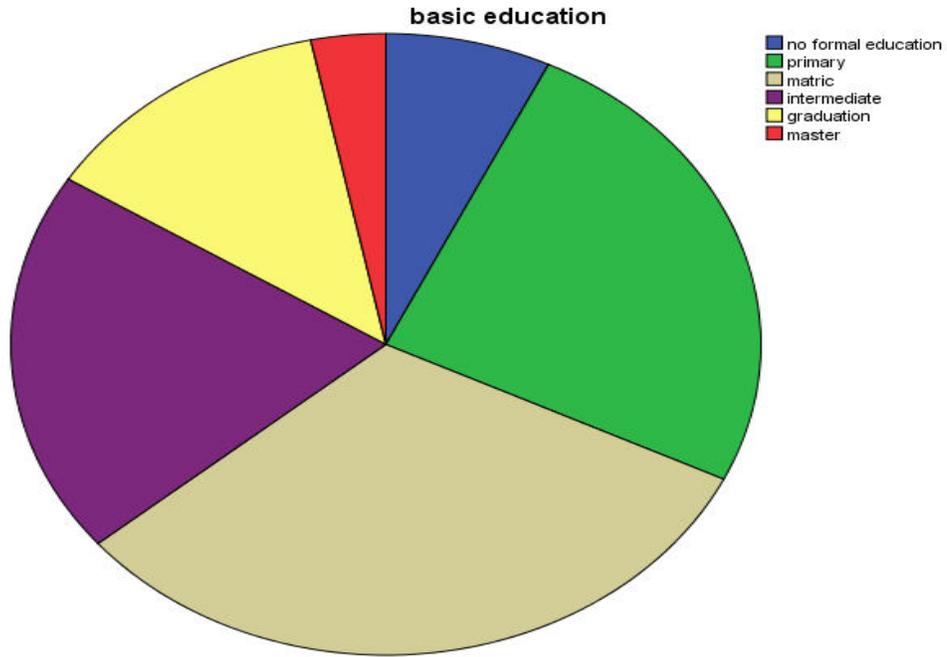


fig1.2:-majority of respondents who had basic education up to matriculation only in contrast, only few had education up to graduation and masters

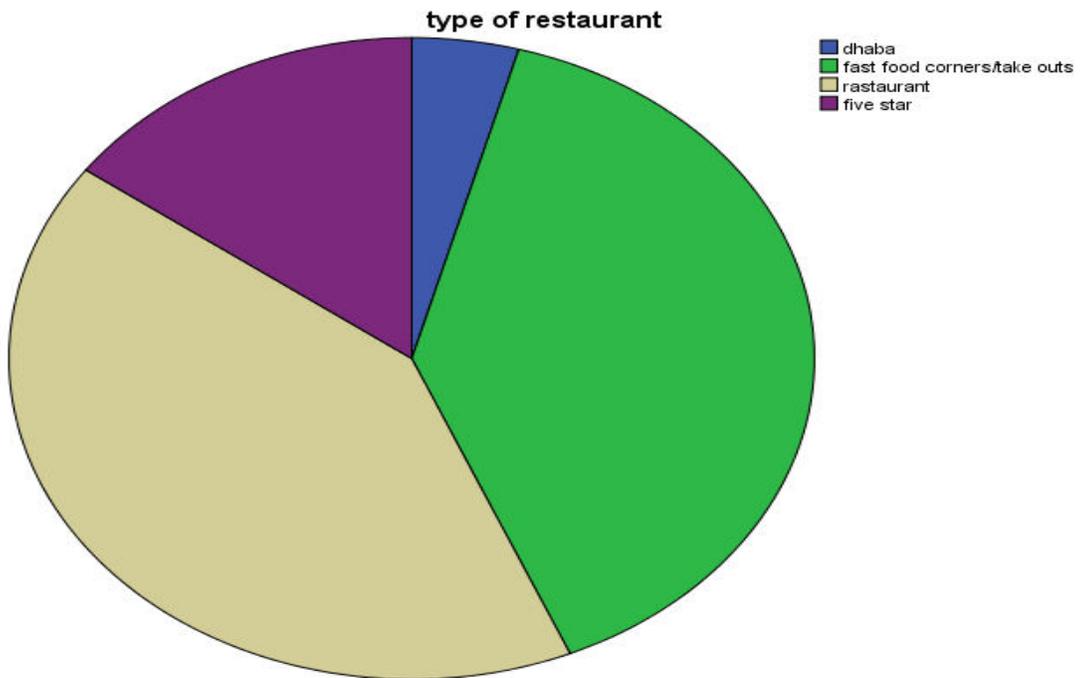


fig1.3:- pie chart presenting that majority of data had been collected from restaurants.

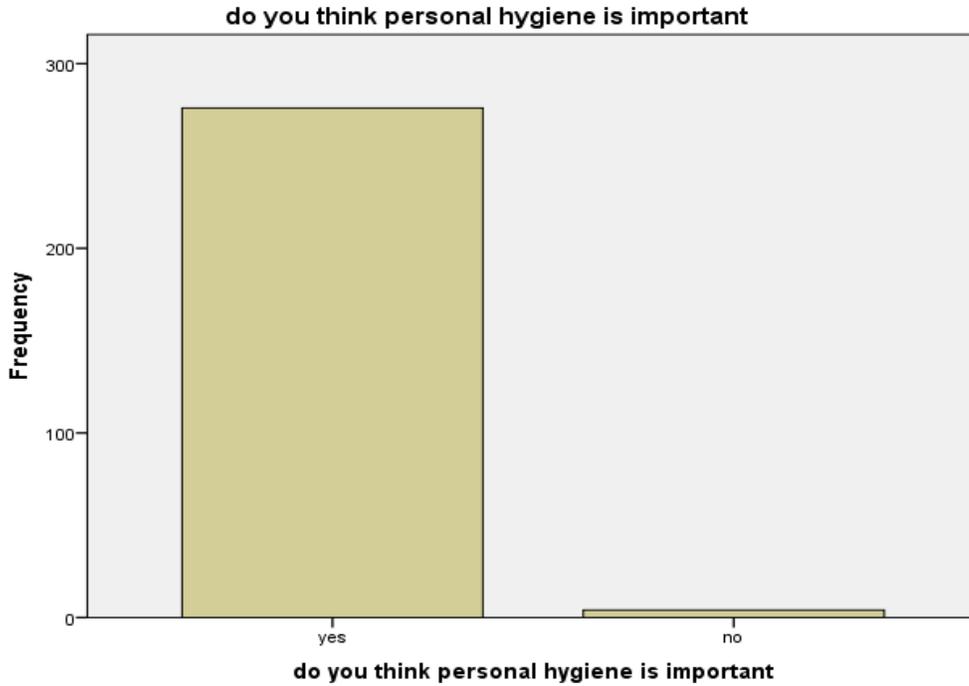


fig1.4:- Bar chart showing that majority of professional cooks had knowledge about personal hygiene & its importance

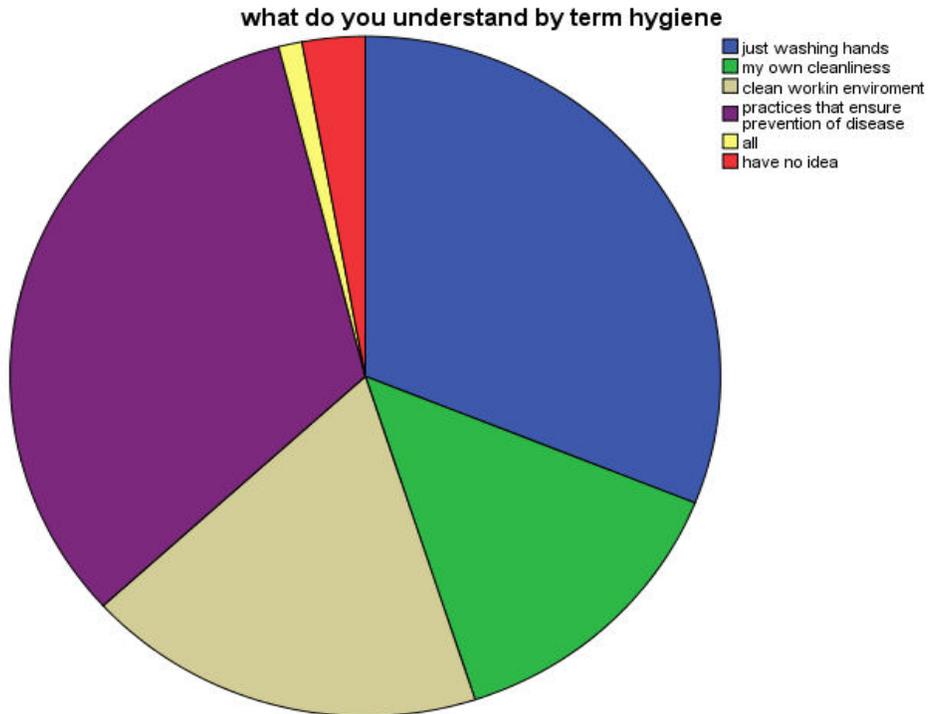


fig1.5:- bar chart presenting knowledge about understanding of term hygiene. Very small proportion had knowledge that all of these factors were related to hygiene as shown in chart by yellow color.

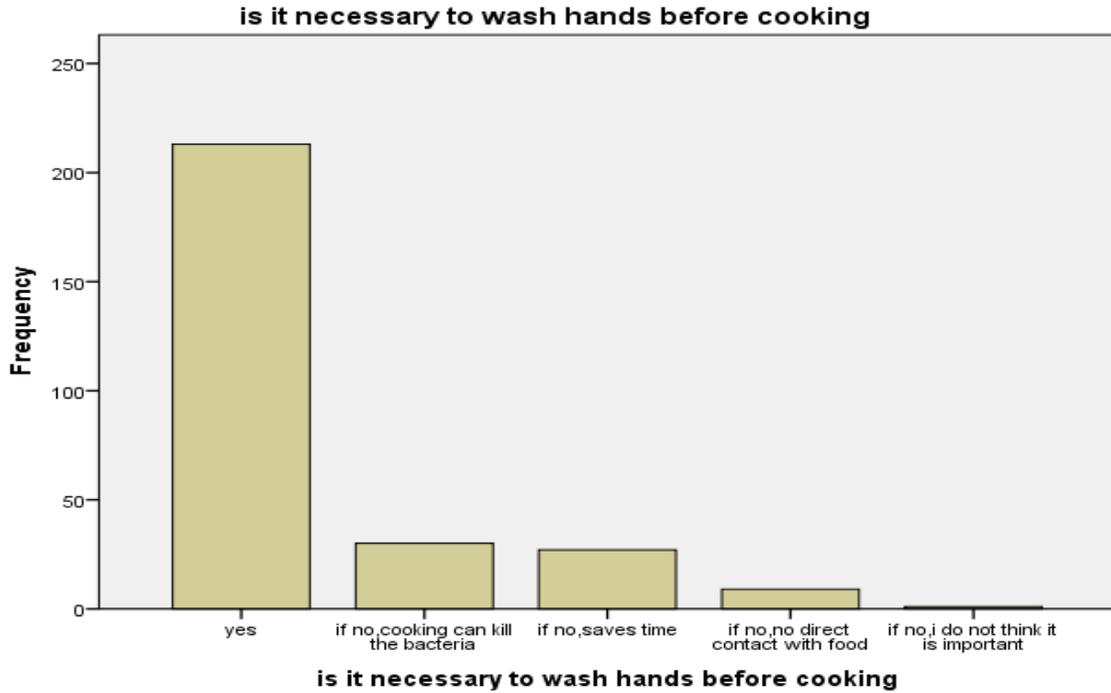


fig1.6: bar chart presenting that majority of respondents had knowledge about hand washing

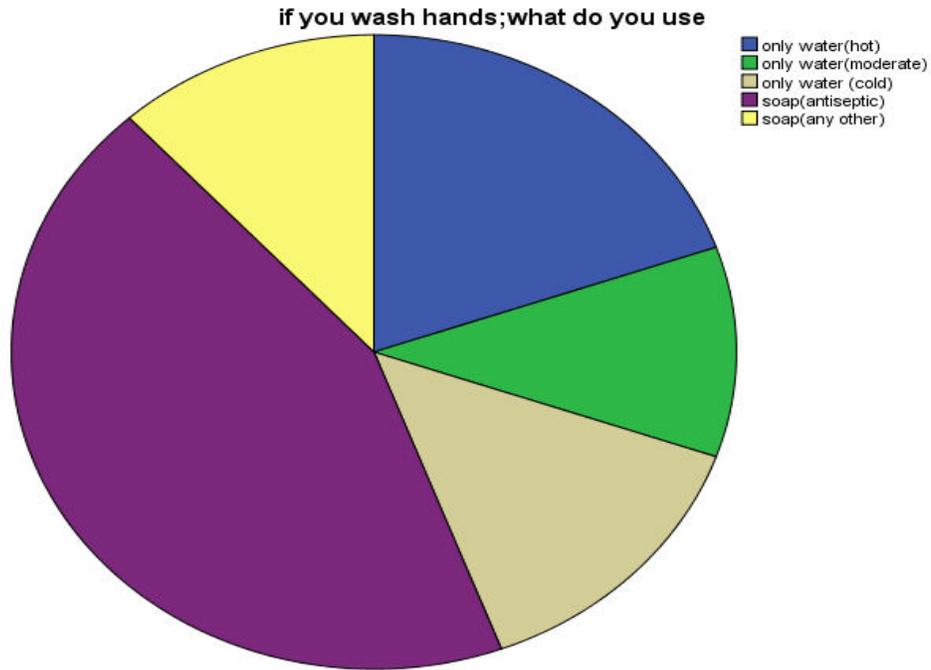


Fig 1.7:- in bar chart purple color presenting that majority of respondents wash their hands with antiseptics, in comparison there are large number of respondents who only wash their hands with water (in green & blue color).

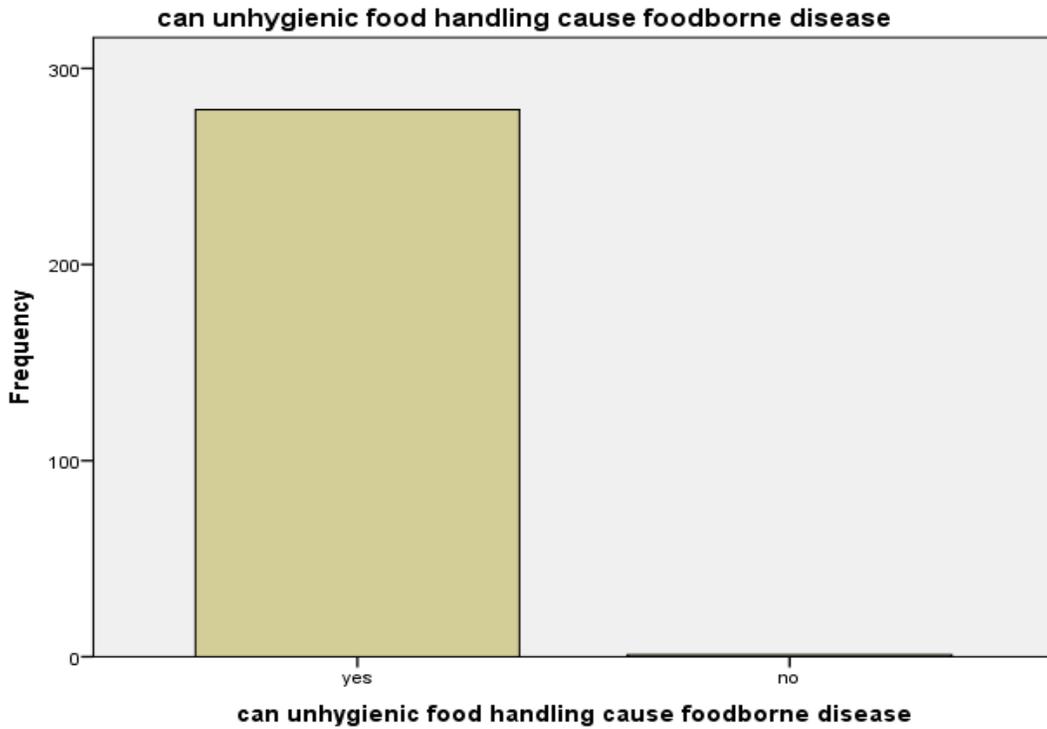


fig1.8:- respondents had knowledge that unhygienic food handling causes food borne diseases

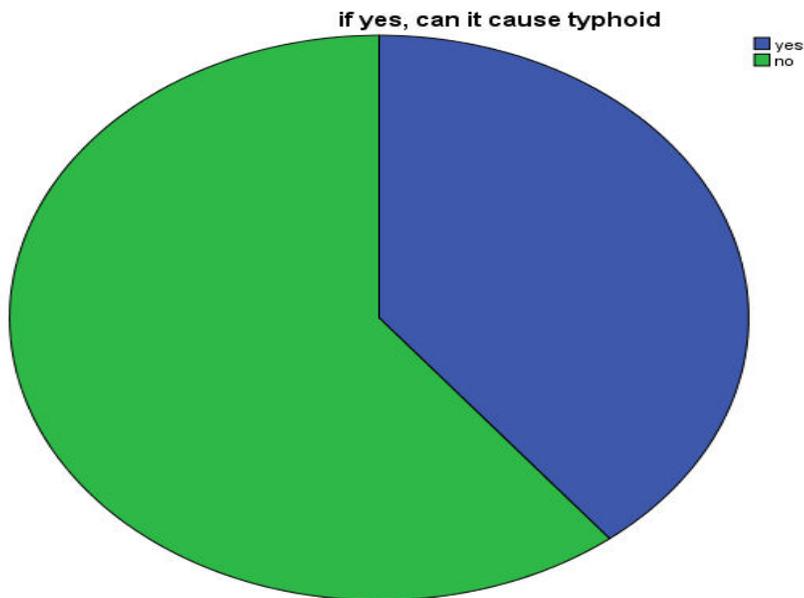


Fig1.9:- bar chart present that most of respondent's do not had knowledge that typhoid is a food borne disease (shown by green color)

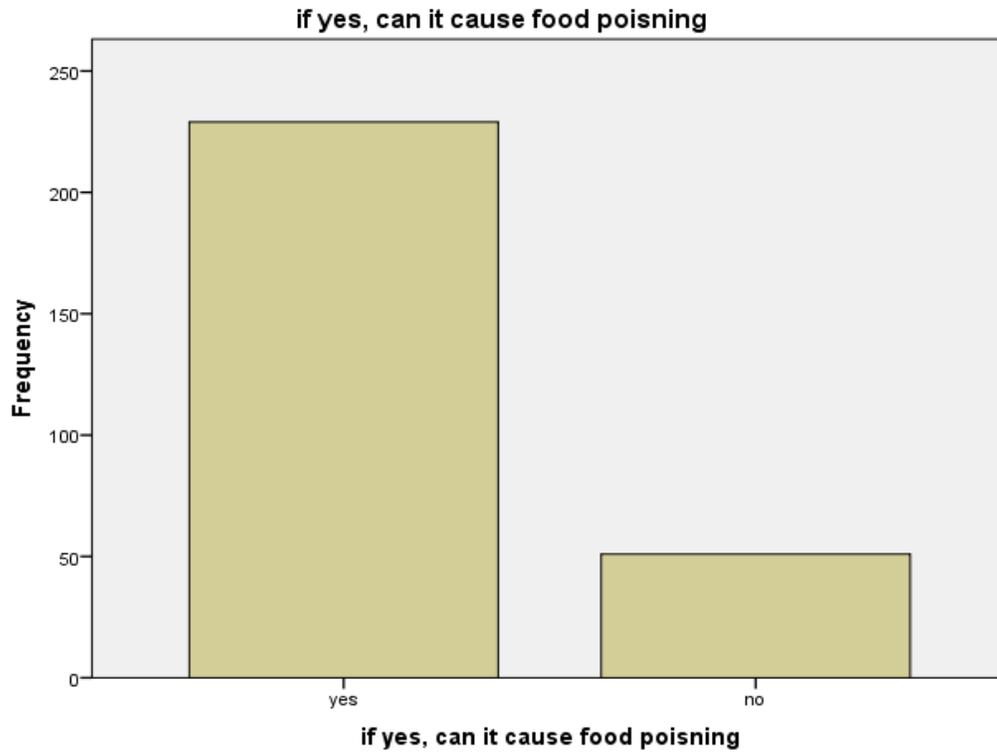


Fig 1.10:- large number of respondents had knowledge that food poisoning is a food borne disease. ( pie chart presenting large number of respondents who were aware of it)

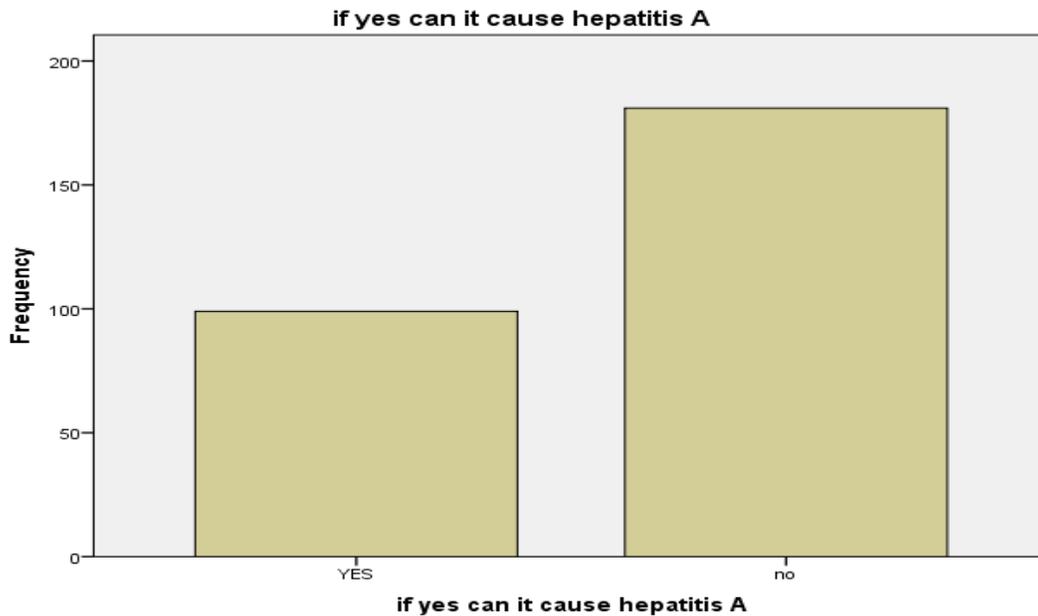


Fig 1.11:-bar chart showing majority had no knowledge that hepatitis is a food borne disease & how it spread.

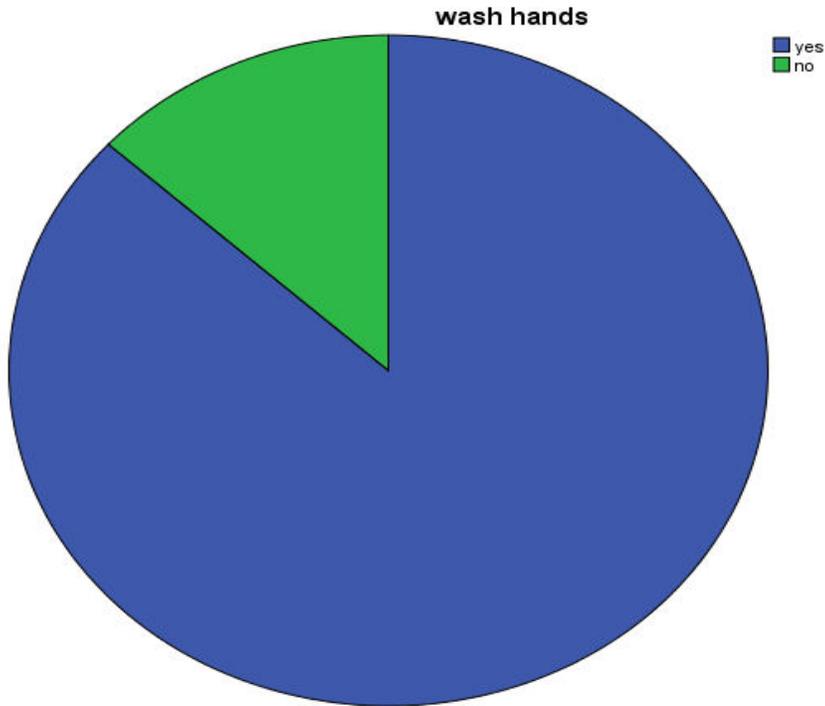


Fig 1.12:- majority of respondents were practicing hand washing as presented in bar chart by blue color

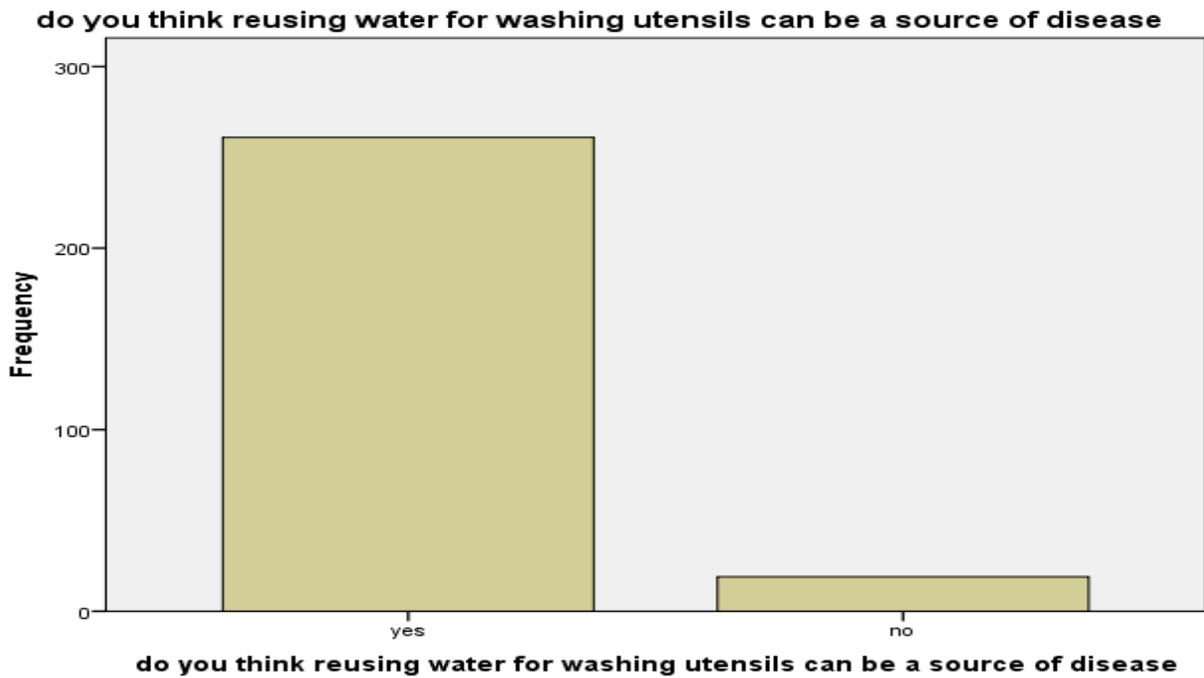


Fig 1.13:- very large number of respondents had knowledge that reusing water for washing utensils can be a source of disease as presented in bar chart.

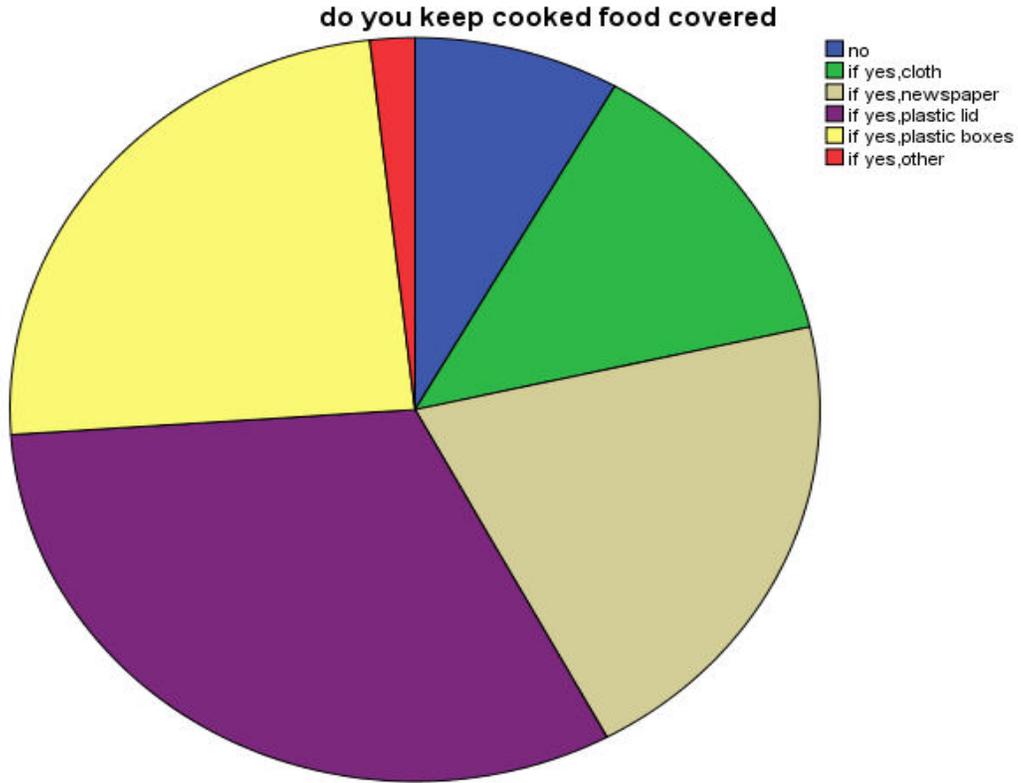


Fig1.14:- very small proportion not covers the food while majority of them cover food with cloth, news paper, plastic lid, plastic boxes. In bar chart blue color presents the respondents that did not cover the cooked food covered.

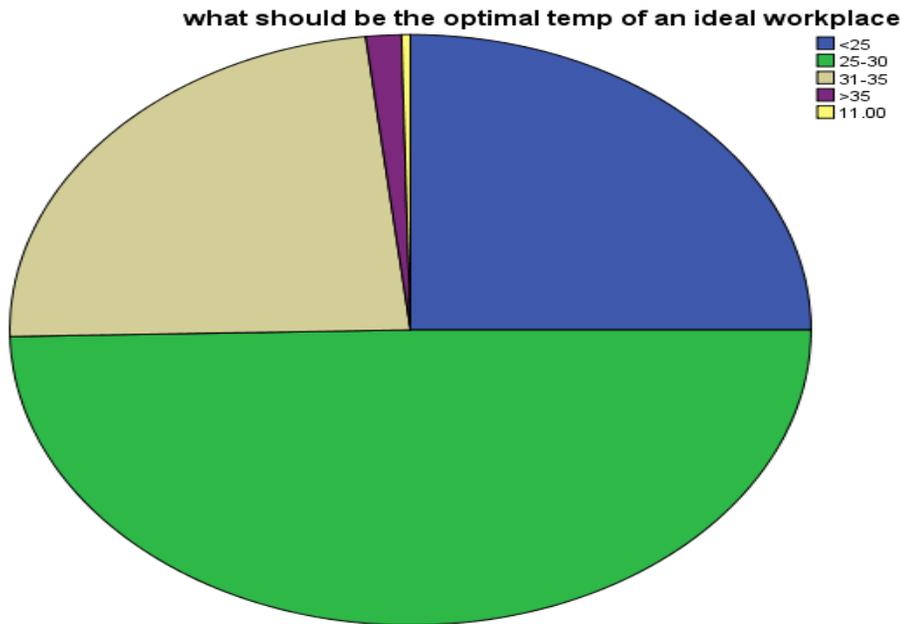


Fig 1.15:- majority of respondents had knowledge that ideal workplace temp should be between 25-30 degree Celsius. In pie chart green color present this proportion.

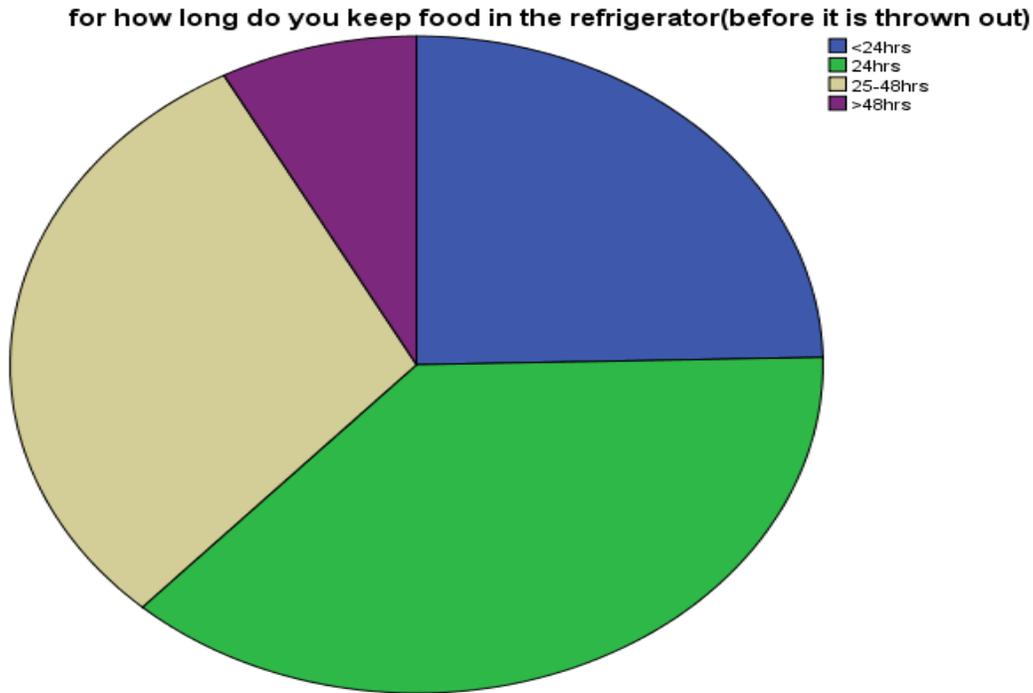


fig1.16:- bar chart presenting that majority of respondents keep food in fridge for 24 hrs on other hand almost equal number of respondents keep food refrigerated for 25-48 hrs in comparison very small number keep it in refrigerator for < 24 hrs or > 48 hrs as presented in bar chart.

**CROSSTABULATION**

Table 2.1: professional courses and food safety \* what do you understand by term hygiene

crosstab

Count

		what do you understand by term hygiene						Total
		just washing hands	my own cleanliness	clean working environment	practices that ensure prevention of disease	all	have no idea	
professional courses and food safety	yes	8	3	8	31	3	0	50
	no	79	36	43	61	0	8	230
Total		87	39	51	92	3	8	280

## Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	25.486a	5	.000
Likelihood Ratio	26.299	5	.000
Linear-by-Linear Association	10.163	1	.001
N of Valid Cases	280		

the cross tabulation between cooks who had done professional courses and knowledge of term hygiene showed the cooks who were professionally trained had significant knowledge of hygiene as compared to those who had not received any training (p value=0.000)

Table 2.2: professional courses and food safety \* is it necessary to wash hands before cooking

Crosstab

Count

	is it necessary to wash hands before cooking					Total	
	yes	if no,cooking can kill the bacteria	if no,saves time	if no,no direct contact with food	if no,i do not think it is important		
professional courses and food safety	yes	46	3	0	1	0	50
	no	167	27	27	8	1	230
Total		213	30	27	9	1	280

## Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.659a	4	.047
Likelihood Ratio	14.714	4	.005
Linear-by-Linear Association	7.644	1	.006
N of Valid Cases	280		

Professional cooks who had done courses of food safety and hygiene had significance knowledge of washing hands in contrast to all those who had not done courses of professional education and food hygiene with statistically significant p value of 0.047

Table 2.3: professional courses and food safety \* wash hands

Crosstab

Count

		wash hands		Total
		yes	no	
professional courses and food safety	yes	39	11	50
	no	204	26	230
Total		243	37	280

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.097a	1	.043		
Continuity Correction <sup>b</sup>	3.217	1	.073		
Likelihood Ratio	3.653	1	.056		
Fisher's Exact Test				.062	.041
Linear-by-Linear Association	4.082	1	.043		
N of Valid Cases	280				

Respondents who were professionally qualified were found to be more in practice of washing hands in contrast to those who had not any professional education. This finding also statistically significant with p value of 0.047

Table 2.4: professional courses and food safety \* wear a hair net or cap

Crosstab

Count

	wear a hair net or cap		Total
	yes	no	
professional courses and food safety	23	27	50
	59	171	230
Total	82	198	280

## Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	8.211a	1	.004		
Continuity Correction <sup>b</sup>	7.258	1	.007		
Likelihood Ratio	7.714	1	.005		
Fisher's Exact Test				.006	.004
Linear-by-Linear Association	8.182	1	.004		
N of Valid Cases	280				

Majority of the respondents who had professional education significantly practice to cover head with hair net or cap (p value= 0.004)

Table 2.5: basic education \* what should be the optimal temp of an ideal workplace

Crosstab

Count

			what should be the optimal temp of an ideal workplace					Total
			<25	25-30	31-35	>35	11.00	
basic education	no formal	education	2	10	8	0	0	20
		primary	16	31	19	4	0	70
		matric	19	49	20	0	1	89
		intermediate	18	31	7	0	0	56
		graduation	14	16	6	0	0	36
		master	1	2	6	0	0	9
Total			70	139	66	4	1	280

chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	37.468a	20	.010
Likelihood Ratio	35.201	20	.019
Linear-by-Linear Association	3.897	1	.048
N of Valid Cases	280		

Participants who had basic education majority of them had knowledge that optimal temperature of ideal workplace should be between 25-30 degree Celsius and this result is statistically significant with value of .010

Table 2.6: basic education \* do you think if a meal is prepared by a diseased person, he can transmit disease

Crosstab

Count

		do you think if a meal is prepared by a diseased person, he can transmit disease			Total
		yes	no	4.00	
basic education	no formal education	14	6	0	20
	primary	61	8	1	70
	matric	84	5	0	89
	intermediate	55	1	0	56
	graduation	36	0	0	36
	master	9	0	0	9
Total		259	20	1	280

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	27.000a	10	.003
Likelihood Ratio	24.251	10	.007
Linear-by-Linear Association	16.035	1	.000
N of Valid Cases	280		

respondents who had no formal education total (n=20) out of this only 14 respondents think that meal prepared by diseased person can transmit disease in contrast to respondents who had basic education n=260 out of this only 14 respondents think that meal prepared by diseased person cannot transmit disease. This shows that majority of population who had basic education have knowledge this is also signified by p value .003

TABLE 2.7: basic education \* do you think cooked food should be refrigerated

Crosstab

Count

		do you think cooked food should be refrigerated					Total
		no	if yes, 1day	if yes,1we ek	if yes, 2week	if yes,long er	
basic education	no formal education	0	11	5	3	1	20
	primary	5	48	9	6	2	70
	matric	6	40	35	8	0	89
	intermediate	3	37	12	3	1	56
	graduation	3	20	9	3	1	36
	master	0	5	0	3	1	9
Total		17	161	70	26	6	280

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	34.615a	20	.022
Likelihood Ratio	36.258	20	.014
Linear-by-Linear Association	.094	1	.759
N of Valid Cases	280		

Majority of respondents refrigerate food for 24 hrs and this had been statistically signified by p value of .022

TABLE 2.8: basic education \* do you work when you have diarrhea

Crosstab

Count

	do you work when you have diarrhea		Total
	yes	no	
basic education	9	11	20
no formal education	15	55	70
primary	13	76	89
matric	8	48	56
intermediate	3	33	36
graduation	1	8	9
master	49	231	280
Total			

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.491a	5	.013
Likelihood Ratio	12.539	5	.028
Linear-by-Linear Association	9.284	1	.002
N of Valid Cases	280		

Respondents who don't had basic education 45% of them work when they have diarrhea while on other hand respondents with basic education only 21% of them work with diarrhea. This shows that majority of respondents who had basic education don't work and chi square test also give statistically significant value of .013

TABLE 2.9: basic education \* do you work when you have cough/cold/flu

Crosstab

Count

		do you work when you have cough/cold/flu		Total
		yes	no	
basic education	no formal education	15	5	20
	Primary	38	32	70
	Matric	41	48	89
	Intermediate	24	32	56
	Graduation	17	19	36
	Master	1	8	9
Total		136	144	280

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	12.545a	5	.028
Likelihood Ratio	13.526	5	.019
Linear-by-Linear Association	7.839	1	.005
N of Valid Cases	280		

Respondents who don't had basic education 75% of them work when they have cough/cold/flu while on other hand respondents with basic education only 52% of them work with cough/cold/flu. This shows that majority of respondents who had basic education don't work and chi square test also give statistically significant value of .028

TABLE 2.10 :basic education \* how often do you clean your kitchen appliances (fridge, microwave, stove)

Crosstab

Count

		how often do you clean your kitchen appliances (fridge,microwave,stove)					Total
		once daily	once week	a once month	a 4.00	5.00	
basic education	no formal education	8	6	6	0	0	20
	primary	41	12	17	0	0	70
	matric	52	23	12	2	0	89
	intermediate	24	22	10	0	0	56
	graduation	14	18	3	0	1	36
	master	1	6	2	0	0	9
Total		140	87	50	2	1	280

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	38.293a	20	.008
Likelihood Ratio	36.523	20	.013
Linear-by-Linear Association	.742	1	.389
N of Valid Cases	280		

Respondents who don't had basic education 40% of them clean kitchen appliances daily while on other hand respondents with basic education 53.8% of them clean kitchen appliances daily. This shows that majority of respondents who had basic education clean kitchen appliances on daily basis and chi square test also give statistically significant value of .008

TABLE 2.11: basic education \* for how long do you keep food in the refrigerator (before it is thrown out)

Crosstab

Count

		for how long do you keep food in the refrigerator(before it is thrown out)				Total
		<24hrs	24hrs	25-48hrs	>48hrs	
basic education	no formal education	4	11	1	4	20
	primary	22	27	18	3	70
	matric	22	26	32	9	89
	intermediate	12	25	17	2	56
	graduation	9	8	16	3	36
	master	0	7	1	1	9
Total		69	104	85	22	280

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	30.216a	15	.011
Likelihood Ratio	33.293	15	.004
Linear-by-Linear Association	1.436	1	.231
N of Valid Cases	280		

104 respondents keep food for 24 hrs in refrigerators and 69 for <24 hrs. majority of respondents had knowledge about proper food storage and they were practicing them this was statistically significant with 0.011

Table 2.12: Type of restaurant\* if yes can it cause disease

Crosstab

Count

		if yes, can it cause typhoid		Total
		yes	no	
type of restaurant	dhaba	5	7	12
	fast food corners/take outs	33	77	110
	rastaurant	45	71	116
	five star	27	15	42
Total		110	170	280

CHi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.022a	3	.002
Likelihood Ratio	14.834	3	.002
Linear-by-Linear Association	9.984	1	.002
N oValid Cases	280		

58.3% respondents from dhabas had no knowledge about spread of typhoid while 64.2% respondents from 5 star hotels had knowledge that typhoid is food borne disease and statistically signified with p value of .002

Table 2.13: type of restaurant \* is it necessary to wash hands before cooking

Count	crosstab					Total
	is it necessary to wash hands before cooking					
	yes	if no,cooking can kill the bacteria	if no,saves time	if no,no direct contact with food	if no,i do not think it is important	
type of dhaba restaurant	10	2	0	0	0	12
fast food corners/take outs	73	14	18	5	0	110
restaurant	90	14	8	3	1	116
five star	40	0	1	1	0	42
Total	213	30	27	9	1	280

## chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.174a	12	.048
Likelihood Ratio	27.539	12	.006
Linear-by-Linear Association	6.014	1	.014
N of Valid Cases	280		

213 respondents out of 280 respondents wash hand ( at all levels from dhaba to 5 star). This majority also shows statistically significant value .048

TABLE 2.14: type of restaurant \* how often do you think cooks should be medically examined

Crosstab

Count

	how often do you think cooks should be medically examined				Total
	monthly	every 3 months	twice every year	once annually	
type of dhaba restaurant	1	0	5	6	12
fast food corners/take outs	16	29	46	19	110
restaurant	32	21	50	13	116
five star	7	15	13	7	42
Total	56	65	114	45	280

Majority of respondents had knowledge about medical examination. 114 out of 280 were in favor of medical examination twice in year. This shows statistically significant p value of .003

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	25.005a	9	.003
Likelihood Ratio	24.708	9	.003
Linear-by-Linear Association	5.951	1	.015
N of Valid Cases	280		

**DISCUSSION:**

We interviewed 280 respondents from different restaurants in RWP n ISB from 15% from 5star, 41.4%from restaurants, 39.3% from fast food corners , 4.3% from dhabas.

The basic education of majority of the male cooks, matriculation (31.8%) , (82.1%) had no professional & food safety education, and working experience

b/w 6-10 years for about (36.4%) of the total respondents.

Knowledge about food safety & hygiene was more in educated individuals however; respondents with no basic education also showed positive results for basic knowledge. (32.9%) of them understood that the term hygiene meant practices that ensure prevention of disease, (98.6%) thought personal hygiene is important, (99.6%) cooks know unhygienic food

handling can cause food borne diseases, [ (81.8%) know that unhygienic food handling can cause food poisoning, however (60.0%) said typhoid isn't food borne disease, (53%) were aware that diarrhoea is a food borne disease, (64.6%) believed hepatitis had no relation with unhygienic food handling ].(50%) said they clean their work place daily, (76.1%) of the cooks know that washing hands is necessary, (92.2%) cooks said reusing water for washing utensils can cause disease.

Attitude about food hygiene was significantly positive in educated and professionally trained individuals. (49.6%) think that the ideal workplace temperature is b/w 26-30 degree Celsius, (92.5%) know that food cooked by a diseased person can further transmit disease, (40.7%) know that medical examination should be done after every 6 months, (89.3%) said that overgrown fingernails/dirty fingernails are a source of bacteria, (45.7%) cover the food to prevent it from flies, (57.5%) think that food can safely be refrigerated for 1 day or less, (95.4%) believe further learning about food hygiene is important.(96.4%) believed that cooks should have proper hygienic habits, (90.4%) understand that offering hygienic food is an important part of their job, (89.6%) said washing hands decreases the risk of contamination, (56%) said that only the cook in charge is responsible for the maintenance and provision of hygienic food, (76.4%).

Proper Practice was displayed majorly by educated and trained respondents although uneducated and untrained respondents did have apt knowledge yet; most of them were not practicing it. (86.8%) wash hands, (70.7%) don't wear a hair cap, (58.6%) don't wear an apron, (75.4%) don't wear gloves, (42.1%) wash hands before handling food, out of which (43.9%) use antiseptic soap, (48.9%) dry their hands with a towel, out of which only (47.9%) wash their towel daily, (82.5%) don't work with diarrhoea (88.2%) don't work with lesion on their hands, (90.7%) don't work with jaundice, however; (80%) do work when they have food poisoning, only (51.4%) don't work with cough & flu, (85.4%) clean contact surfaces before cutting, (52.9%) wash utensils daily, out of which (95.1%) wash utensils with regular soap, (31.8%) cover food with plastic lid, (50%) clean kitchen appliances daily, (43.2%) keep food in refrigerator to keep it fresh, out of which (37.1%) keep food refrigerated for 24 hours before it is thrown out.

In Our study those respondents who had proper food safety education and had taken Professional courses, their Level of knowledge was higher than non trained

professional cooks. A majority of the cooks had a positive attitude towards food safety, but only 17.9% respondents had taken Professional courses. All of whom were practicing proper hygienic methods including, washing hands, wearing hair nets & apron more regularly. a majority of the Respondents who had not taken any Professional training had basic knowledge (%age of this knowledge was less than trained cooks). Many of them were aware of importance of hand washing, wearing apron hair net, but there however; showed poor attitude and practice. There were cooks (n=20) Who did not have any formal education, had poor knowledge about food hygiene and the majority of them were not practicing safe hygienic methods (even if they had apt knowledge). The Majority of our respondents had secondary education and had satisfactory awareness about food hygiene and had a positive attitude; Awareness also increased with an increase in the level of education. Cooks with the basic education showed better practice than those who had no formal education. The Type of restaurant was also a factor affecting the knowledge, attitude and practice. Respondents from 5 star hotels had more awareness and practiced proper hygienic methods of Food handling as compared to those who were working in fast food corners & roadside dhabas. Respondents from dhabas were not even aware that typhoid is a food borne disease whereas respondents from 5 star hotels were aware of it. Respondents from 5 star hotels were aware of regular medical examination of cooks however; those from dhabas showed a complete lack of awareness in this regard.

Various international studies conducted previously also state a positive relationship between professional training and good hygienic knowledge attitude and practices. A previous study suggests that professional cooks in restaurants generally display good knowledge, a positive attitude. 14. A study conducted amongst food vendors stated that training helps to improve overall food vendors practice of food safety. analysis revealed that it was 4.039 times higher with good practice and 2.834 times higher with average practice of food safety among respondents with history of food safety training. 7 Another study was conducted among 64 cooks from various food premises in Kuala Pilah, Malaysia. The study concluded that the knowledge and attitude showed significant relationship with practice level These findings support the evidence of having good knowledge and attitude will lead to good practice measures 8.

Luby et al., (1993) reported that training is not consistently associated with knowledge. The present study did not find any significant

association between knowledge and food safety training ( $p>0.05$ ). But training itself increased the food safety attitude and practice ( $p<0.05$ ) in contrast to study done by Luby et al our study found that training improves KAP.

### CONCLUSION:

The topic of our study was very unique as no previous study has been conducted on the topic in Rawalpindi and Islamabad. A vast majority of the professional cooks have satisfactory or good knowledge, but this knowledge is not reflected upon their practices, and thus their practices remain mostly unsatisfactory. Individuals who have a basic education and those who have taken professional training or courses have significantly more knowledge about food safety and practices, which are in turn better in expensive or posh restaurants as compared to roadside dhabas, fast food and take a ways.

### REFERENCES:

1. Pilling, V. K., Brannon, L. A., Shanklin, C. I. W., Kevin, R., Roberts, K. R., Barrett, B. B., & Howells, A. D. 2008. Food Safety Training Requirements and Food Handlers' Knowledge and Behaviors. *Food Protection Trends*, 28 ( 3): 192–200.
2. Schlundt, J., Toyofuku, H., Jansen, J., & Herbst, S. A. 2004. Emerging Food-Borne Zoonoses. *Review of Science and Technology*, Volume 23, pp 513-515.
3. Bryce, J., Boschi-Pint, C., Shibuya, K., Black, R. E., & the WHO Child Health Epidemiology Reference Group. (2005). WHO estimates of the causes of death in children. *The Lancet*, 365(9465), 1147-1152.
4. Campos, A. K. C., Cardonha, Â. M. S., Pinheiro, L. B. G., Ferreira, N. R., Azevedo, P. R. M., & Stamford, T. L. M. (2009). Assessment of personal hygiene and practices of food handlers in municipal public schools of Natal, Brazil. *Food Control*, 20, 807-810
5. WHO: Five keys to safer food manual. Geneva: WHO; 2006.
6. Ansari-Lari, M., Soodbakhsh, S., & Lakzadeh, L. (2010). Knowledge, attitudes and practices of workers on food hygienic practices in meat processing plants in Fars, Iran. *Food Control*, 21, 260-263.
7. Food Safety Knowledge, Attitude And Hygiene Practices Among The Street Food Vendors In Northern Kuching City, Sarawak Md Mizanur Rahman, Mohd. Taha Arif, Kamaluddin Bakar, & Zainab bt Tambi
8. N.-A. Abdul-Mutalib et al. / *Food Control* 27 (2012) 289-293
9. H. Kassa, "An Outbreak of Norwalk-Like Viral Gastroenteritis in a Frequently Penalized Food Service Operation," *Journal of Environment Health*, Vol. 64, No. 10, 2001, pp. 9-13
10. Food Sanitation Knowledge, Attitude, and Behavior for the University Restaurants Employees
11. M. Anuradha and Dandekar RH "Knowledge, Attitude and Practice among food handlers on food borne diseases" *international journal of biomedical and advanced health*, ISSN: 2229-3809 (Online) Journal DOI:10.7439/ijbar CODEN:IJBABN
12. S. C. Powell, R. W. Attwell and S. J. Massey, "The Impact of Training on Knowledge and Standards of Food Hygiene—A Pilot Study," *International Journal of Environment Health Research*, Vol. 7, No. 5, 1997, pp. 329- 334.
13. Assessment of Knowledge, Attitude and Practices Concerning Food Safety among Restaurant Workers in Putrajaya, Malaysia
14. Ab. Hamid, Rosnani, Radu, Son, Othman, Mohhidin, Poh See, Toh, Lay Ching, Chai
15. M. Anuradha and Dandekar RH "Knowledge, Attitude and Practice among food handlers on food borne diseases" *international journal of biomedical and advanced health*, ISSN: 2229-3809 (Online) Journal DOI:10.7439/ijbar CODEN:IJBABN.